

CLAIMS

What is claimed is:

1. A method for computer-aided monitoring of a telecommunication network formed of devices capable of communication, said method comprising:
 - determining activity parameters, each describing activity of at least one of a corresponding device and a corresponding service;
 - comparing the activity parameters by a statistical estimator trained with training data and having a normal range of dependence based on dependences determined between the devices; and
 - determining from said comparing whether at least one of the devices and services in the telecommunication network has a communication performance different from the normal range of dependence in accordance with a predetermined criterion.
2. The method as claimed in claim 1, wherein at least some of the devices are constructed as terminals capable of communication.
3. The method as claimed in claim 1, wherein the activity parameters are determined within a predetermined time interval.
4. The method as claimed in claim 1,
 - wherein said determining of each activity parameter is performed by the corresponding device, and
 - wherein said method further comprises transmitting the activity parameters to an administration unit which performs said comparing and determining based on said comparing.
5. The method as claimed in claim 1, wherein said determining of each activity parameter is performed by an activity parameter determining unit separate from the corresponding devices.
6. The method as claimed in claim 1, further comprising determining communication-dependent dependences between at least some of the devices and services.

7. The method as claimed in claim 1, further comprising determining possible directional dependences with regard to directions of communication between at least some of the devices and services.

8. The method as claimed in claim 1,
further comprising determining data of at least some of the devices and services,
and
wherein said determining of the activity parameters is based on the data.

9. The method as claimed in claim 1, wherein said determining of the activity parameters uses all possible pairs of the devices and pairs of services.

10. The method as claimed in claim 9, further comprising:
storing the activity parameters determined from the pairs of devices in a matrix;
and
determining the normal range of dependence from a structure of the matrix.

11. The method as claimed in claim 1, wherein at least one of the following parameters is determined as one of the activity parameters
data packets sent or received by the at least one of a corresponding device and a corresponding service,
processor utilization of the corresponding device,
a number of predetermined system function calls, and
existence of at least one of predetermined processes and predetermined computer programs.

12. The method as claimed in claim 1, wherein a neuro-fuzzy model is used as the statistical estimator.

13. The method as claimed in claim 1, further comprising generating an alarm signal when at least one device in the telecommunication network differs from the normal range of dependence in accordance with the predetermined criterion.

14. The method as claimed in claim 1, further comprising at least one of

determining a disturbance of one of the devices in the telecommunication network;

determining an unauthorized attempt to access one of the devices; and

determining an unauthorized access attempt by one of the devices.

15. A method for computer-aided training of a statistical estimator for administering a telecommunication network formed of devices capable of communication, said method comprising:

determining activity parameters, each describing activity of at least one of a corresponding device and a corresponding service;

determining possible dependences between the devices and services from the activity parameters; and

determining from the possible dependences a normal range of dependence for at least some of the devices and services in essentially undisturbed states to train the statistical estimator.

16. The method as claimed in claim 15, wherein at least some of the devices are constructed as terminals capable of communication.

17. The method as claimed in claim 15, wherein the activity parameters are determined within a predetermined time interval.

18. The method as claimed in claim 15,

wherein said determining of each activity parameter is performed by the corresponding device, and

wherein said method further comprises transmitting the activity parameters to an administration unit which performs said determining of the possible dependences and the normal range of dependence.

19. The method as claimed in claim 15, wherein said determining of each activity parameter is performed by an activity parameter determining unit separate from the corresponding devices.

20. The method as claimed in claim 15, further comprising determining communication-dependent dependences between at least some of the devices and services.

21. The method as claimed in claim 15, further comprising determining possible directional dependences with regard to directions of communication between at least some of the devices and services.

22. The method as claimed in claim 15,
further comprising determining data of at least some of the devices and services,
and
wherein said determining of the activity parameters is based on the data.

23. The method as claimed in claim 15, wherein said determining of the activity parameters uses all possible pairs of the devices and pairs of services.

24. The method as claimed in claim 23,
further comprising storing the activity parameters determined from the pairs of devices in a matrix, and
wherein said determining of the normal range of dependence is based on a structure of the matrix.

25. The method as claimed in claim 15, wherein at least one of the following parameters is determined as one of the activity parameters
data packets sent or received by the at least one of a corresponding device and a corresponding service,
processor utilization of the corresponding device,
a number of predetermined system function calls, and
existence of at least one of predetermined processes and predetermined computer programs.

26. A method as claimed in claim 15, wherein a neuro-fuzzy model is used as the statistical estimator.

27. A device for computer-aided monitoring of a telecommunication network formed of devices capable of communication, comprising:

at least one processor to determine activity parameters, each describing activity of at least one of a corresponding device and a corresponding service, to compare the activity parameters by a statistical estimator trained with training data and having a normal range of dependence based on dependences determined between the devices, and to determine from said comparing whether at least one of the devices and services in the telecommunication network has a communication performance different from the normal range of dependence in accordance with a predetermined criterion.

28. At least one computer-readable storage medium storing at least one computer program for computer-aided monitoring of a telecommunication network formed of devices capable of communication, to control a processor to perform a method comprising:

determining activity parameters, each describing activity of at least one of a corresponding device and a corresponding service;

comparing the activity parameters by a statistical estimator trained with training data and having a normal range of dependence based on dependences determined between the devices; and

determining from said comparing whether at least one of the devices and services in the telecommunication network has a communication performance different from the normal range of dependence in accordance with a predetermined criterion.

28. At least one computer-readable storage medium storing at least one computer program for computer-aided training of a statistical estimator for administering a telecommunication network formed of devices capable of communication, to control a processor to perform a method comprising:

determining activity parameters, each describing activity of at least one of a corresponding device and a corresponding service;

determining possible dependences between the devices and services from the activity parameters; and

determining from the possible dependences a normal range of dependence for at least some of the devices and services in essentially undisturbed states to train the statistical estimator.